Method and system for controlling an Internet service

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The invention relates to a method according to the preamble of claim 1 for controlling an Internet service.

The invention also concerns a system for controlling an Internet service.

Generally, the invention serves the control of an Internet service such as an e-commerce site. The control is arranged to be carried out using a telephone set. With the help of the telephone, the state and function of the service can be steered and reports on the progress of the service received.

Conventionally, Internet services have been controlled via a computer equipped with an Internet connection. Herein, an Internet browser or a Telnet connection has served as the user interface. Alternatively, the service has been arranged to be directly controllable from a server.

A disadvantage of the computer-based arrangement of access control to a service has been that the user needs a computer with an installed Internet connection facility. This complicates the control of the service and limits the user's freedom of movement. Furthermore, the cost of solving the problem by means of a portable computer and a wireless Internet connection becomes high.

It is an object of the invention to overcome the above-mentioned disadvantages and to provide an entirely novel type of method and system for controlling an Internet service.

The goal of the invention is achieved through arranging an Internet server to cooperate with an automated voice response system, a telephone set and a text message service.

In the control of an Internet service, the service user follows the instructions issued

by the automated voice response system. To proceed and activate the system functions, the service user issues commands through DTMF signalling and/or uttered phrases. The system response to the calling service user is transmitted as a voice signal or a GSM text message.

More specifically, the method according to the invention is characterized by what is stated in the characterizing part of claim 1.

Furthermore, the system according to the invention is characterized by what is stated in the characterizing part of claim 5.

The invention offers significant benefits.

A particular advantage gained through the use of a telephone set as the control terminal of a service is the easy accessibility of the service. For the control of the service, the service user only needs a telephone. Hence, the user does not require a computer or an Internet connection to gain access to the service. If the user possesses a cellular phone, the Internet service is available almost at any time and in any place. This feature is of a primary importance in operative information systems such as e-commerce sites.

In the following, the invention will be examined with the help of exemplifying embodiments by making reference to the attached drawings, in which:

Figure 1 shows a flow diagram of an embodiment of a system layout according to the invention; and

Figure 2 shows diagrammatically an example of the temporal progress of the method according to the invention.

Referring to Fig. 1, the subscriber first calls a voice response system 6 by placing a call from a telephone 1 via a telephone exchange 2. The voice response system 6 is

comprised of a physical server, a connection to the telephone network (through an interface card), a server software and an application capable of responding to incoming service user calls.

The application of the voice response system 6 submits the service user a menu from which the user selects a desired function. The selection is accomplished by means of dual-tone multifrequency (DTMF) dialling. Next, the application requests the service user 1 to submit required defining parameters. A message is then formed by the application from the submitted information. The message 30 is sent to the Internet server 3 via, e.g., a socket connection. The Internet server 3 in turn is connected to an Internet network 4 through which the service users 7 can make, e.g., purchases via said Internet network 4.

At the Internet server 3, the control application monitors a given port. At the receipt of a message 30 from the application of the automated voice response system 6, the control application interprets the contents of the message 30 and carries out the required actions. Next, the control application returns to the voice response system 6 via the same channel a message 31 of a successful or unsuccessful execution of requested actions. The additional parameters may also be used for transmitting other information such as a report compiled by the server.

The service user 1 receives from the voice response system 6 a message indicating the success status of the requested service. Alternatively, the voice response system 6 can send the information as a short message to the calling subscriber. The short message is sent in real time by establishing a connection 33, e.g., using the CIMD protocol to a short-message center 5 of the cellular phone operator. Next, the short-message center 5 handles the radio-frequency transmission of message 32 to the calling subscriber 6.

The application of the voice response system 6 and the Internet server 3 cooperate in real time, which means that the service user can receive the response to the desired action immediately during the progress of the call. Obviously, a plurality of

commands can be issued during a single call.

The voice response system can be replaced by a messaging device of an intelligent network (IP). In the context of the present invention, such devices and others capable of the same functions are more generally called voice message systems.

Now referring to Fig. 2, therein is shown the control sequence of a WWW server (including the actual WWW server, e-commerce software, control server, databases and the like) by means of an IVR (intelligent voice response) device comprising the following steps:

11. The IVR device offers a socket connection to a preset port numbered, e.g., as 2345, of the WWW server where the control server answers.
12. The control server accepts the connection and sends an acknowledge signal to the IVR device.
13. The voice response device requests the subscriber calling the service to submit an ID code and a password.
14. The service user submits the ID code and the password from the keypad of the telephone. The ID code and password are transmitted as DTMF signals to the IVR device.
15. The password is passed to the control server over the socket connection.
16. The control server performs a query on the database to verify the validity of the service user's ID code and password.
17. The result of the query is passed to the control server.
18. The control server passes the validity information of the submitted password to the IVR device via the socket connection.
19. If the password is acceptable, the IVR device reads the menu contents to the service user, while the entry of an unacceptable password or ID code is reported to the calling subscriber and the service is terminated.
20. In the first case, the service user selects one alternative from menu by depressing the respective key of his telephone. The DTMF signal is transmitted to the IVR device. If the calling subscriber selects to terminate the call, the flow diagram

proceeds to item 16.

21. Via the socket connection, the IVR device sends a command to the control server. Some of the needed commands are, e.g.:

"ping 1"	Check if e-commerce server #1 is open
"stats 2"	Statistics query on e-commerce server #2
"open 1"	Open connection to e-commerce server #1
"close 1"	Close connection to e-commerce server #1
"exit"	Terminate connection.

22. The control server updates or queries the service database in a desired manner. The updates are performed in real time. Thus, the calling subscribers gaining access to the WWW pages at any time have realtime updated information available, e.g., that the e-commerce server to be accessed is closed.

23. The information on the query results or success of data update is passed to the control server.

24. Via the socket connection, the control server passes to the IVR device the information on the execution status of requested function (0 = not successful, 1 = successful) and other possible messages such as the results of the database query. Some of the possible response messages are, e.g.:

"0 cannot open"	e-commerce server not opened successfully
"1 shop opened"	e-commerce server opened successfully
"1 visitors; 123 sales; FIM 53421"	Results of statistics information requested by the Stats command
"1 shop ok"	Response to Ping command when e-commerce server transaction found valid
"1 shop not working"	Response to Ping command when e-commerce server transaction found defective
"0 cannot ping"	Response to Ping command found unsuccessful

25. The IVR device processes the response message and query information by issuing a verbal message to the calling subscriber or, alternatively, by sending a text message to the subscriber. The sequence is restarted at item 19; or alternatively

26. The IVR device disconnects the socket connection to the WWW server.

27. A verbal message is issued to the subscriber on the disconnection of the service.

Without departing from the scope and spirit of the invention, embodiments different from those described above may be contemplated. For instance, the implementation of the automated voice response system can be utilizing advanced applications such as text-to-speech synthesis or speech recognition. Furthermore, the application of the automated voice response can be complemented with a pulse signal detection.